SEQUENCE LISTING

<110> Jahic, Haris
Kern, Gu[illegible]

<120> Screening Assay to Identify Inhibitors of the MurD Enzyme using an Activator-Independent MurD enzyme

<130> RE: 100874-1P US

<150> GB 0224997.7
<151> 2002-10-26

<150> PCT/GB2003/004592
<151> 2003-10-23

<160> 4

<170> PatentIn version 3.3

<210> 1
<211> 438
<212> PRT
<213> Escherichia coli

<400> 1

Met Ala Asp Tyr Gln Gly Lys Asn Val Val Ile Ile Gly Leu Gly Leu
1 5 10 15

Thr Gly Leu Ser Cys Val Asp Phe Phe Leu Ala Arg Gly Val Thr Pro
20 25 30

Arg Val Met Asp Thr Arg Met Thr Pro Pro Gly Leu Asp Lys Leu Pro
35 40 45

Glu Ala Val Glu Arg His Thr Gly Ser Leu Asn Asp Glu Trp Leu Met
50 55 60

Ala Ala Asp Leu Ile Val Ala Ser Pro Gly Ile Ala Leu Ala His Pro
65 70 75 80

Ser Leu Ser Ala Ala Ala Asp Ala Gly Ile Glu Ile Val Gly Asp Ile
85 90 95

Glu Leu Phe Cys Arg Glu Ala Gln Ala Pro Ile Val Ala Ile Thr Gly
100 105 110

Ser Asn Gly Lys Ser Thr Val Thr Thr Leu Val Gly Glu Met Ala Lys
115 120 125

Ala Ala Gly Val Asn Val Gly Val Gly Gly Asn Ile Gly Leu Pro Ala
130 135 140

Leu Met Leu Leu Asp Asp Glu Cys Glu Leu Tyr Val Leu Glu Leu Ser
145 150 155 160

Ser Phe Gln Leu Glu Thr Thr Ser Ser Leu Gln Ala Val Ala Ala Thr
165 170 175

```
Ile Leu Asn Val Thr Glu Asp His Met Asp Arg Tyr Pro Phe Gly Leu
            180                 185                 190

Gln Gln Tyr Arg Ala Ala Lys Leu Arg Ile Tyr Glu Asn Ala Lys Val
        195                 200                 205

Cys Val Val Asn Ala Asp Asp Ala Leu Thr Met Pro Ile Arg Gly Ala
    210                 215                 220

Asp Glu Arg Cys Val Ser Phe Gly Val Asn Met Gly Asp Tyr His Leu
225                 230                 235                 240

Asn His Gln Gln Gly Glu Thr Trp Leu Arg Val Lys Gly Glu Lys Val
                245                 250                 255

Leu Asn Val Lys Glu Met Lys Leu Ser Gly Gln His Asn Tyr Thr Asn
            260                 265                 270

Ala Leu Ala Ala Leu Ala Leu Ala Asp Ala Ala Gly Leu Pro Arg Ala
        275                 280                 285

Ser Ser Leu Lys Ala Leu Thr Thr Phe Thr Gly Leu Pro His Arg Phe
    290                 295                 300

Glu Val Val Leu Glu His Asn Gly Val Arg Trp Ile Asn Asp Ser Lys
305                 310                 315                 320

Ala Thr Asn Val Gly Ser Thr Glu Ala Ala Leu Asn Gly Leu His Val
                325                 330                 335

Asp Gly Thr Leu His Leu Leu Leu Gly Gly Asp Gly Lys Ser Ala Asp
            340                 345                 350

Phe Ser Pro Leu Ala Arg Tyr Leu Asn Gly Asp Asn Val Arg Leu Tyr
        355                 360                 365

Cys Phe Gly Arg Asp Gly Ala Gln Leu Ala Ala Leu Arg Pro Glu Val
    370                 375                 380

Ala Glu Gln Thr Glu Thr Met Glu Gln Ala Met Arg Leu Leu Ala Pro
385                 390                 395                 400

Arg Val Gln Pro Gly Asp Met Val Leu Leu Ser Pro Ala Cys Ala Ser
                405                 410                 415

Leu Asp Gln Phe Lys Asn Phe Glu Gln Arg Gly Asn Glu Phe Ala Arg
            420                 425                 430

Leu Ala Lys Glu Leu Gly
        435
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<212> PRT

<213> Escherichia faecalis

<400> 2

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Met Lys Lys Ile Thr Thr Tyr Gln Asn Lys Lys Val Leu Val Leu Gly
1               5                  10                  15

Leu Ala Lys Ser Gly Val Ser Ala Ala Lys Leu Leu His Glu Leu Gly
            20                  25                  30

Ala Leu Val Thr Val Asn Asp Ala Lys Gln Phe Asp Gln Asn Pro Asp
        35                  40                  45

Ala Gln Asp Leu Leu Thr Leu Gly Ile Arg Val Val Thr Gly Gly His
    50                  55                  60

Pro Ile Glu Leu Leu Asp Glu Glu Phe Glu Leu Ile Val Lys Asn Pro
65                  70                  75                  80

Gly Ile Leu Tyr Thr Asn Pro Leu Val Ala Glu Ala Leu Thr Arg Lys
                85                  90                  95

Ile Pro Ile Ile Thr Glu Val Glu Leu Ala Gly Gln Ile Ala Glu Cys
            100                 105                 110

Pro Ile Val Gly Ile Thr Gly Thr Asn Gly Lys Thr Thr Thr Thr Thr
        115                 120                 125

Met Ile Gly Leu Leu Leu Asn Ala Asp Arg Thr Ala Gly Glu Ala Arg
    130                 135                 140

Leu Ala Gly Asn Ile Gly Phe Pro Ala Ser Thr Val Ala Gln Glu Ala
145                 150                 155                 160

Thr Ala Lys Asp Asp Leu Val Met Glu Leu Ser Ser Phe Gln Leu Met
                165                 170                 175

Gly Ile Glu Thr Phe His Pro Gln Ile Ala Val Ile Thr Asn Ile Phe
            180                 185                 190

Glu Ala His Leu Asp Tyr His Gly Ser Arg Lys Glu Tyr Val Ala Ala
        195                 200                 205

Lys Trp Ala Ile Gln Lys Asn Met Thr Ala Glu Asp Thr Leu Ile Leu
    210                 215                 220

Asn Trp Asn Gln Val Glu Leu Gln Thr Leu Ala Lys Thr Thr Ala Ala
225                 230                 235                 240

Asn Val Leu Pro Phe Ser Thr Lys Glu Ala Val Glu Gly Ala Tyr Leu
                245                 250                 255

Leu Asp Gly Lys Leu Tyr Phe Asn Glu Glu Tyr Ile Met Pro Ala Asp
            260                 265                 270
```

```
Glu Leu Gly Ile Pro Gly Ser His Asn Ile Glu Asn Ala Leu Ala Ala
     275                 280                 285

Ile Cys Val Pro Lys Leu Lys Asn Val Ser Asn Ala Gln Ile Lys Gln
    290                 295                 300

Ser Leu Thr Asn Phe Ser Gly Val Pro His Arg Thr Gln Phe Val Gly
305                 310                 315                 320

Glu Val Gln Gln Arg Arg Phe Tyr Asn Asp Ser Lys Ala Thr Asn Phe
                325                 330                 335

Leu Ala Thr Glu Met Ala Leu Ser Gly Phe Asp Asn Gln Lys Leu Leu
            340                 345                 350

Leu Leu Ala Gly Gly Leu Asp Arg Gly Asn Ser Phe Asp Glu Leu Val
        355                 360                 365

Pro Ala Leu Leu Gly Leu Lys Ala Ile Val Leu Phe Gly Glu Thr Lys
    370                 375                 380

Lys Lys Leu Ala Glu Ala Ala Lys Lys Pro Asn Ile Glu Thr Ile Leu
385                 390                 395                 400

Phe Ala Glu Asn Val Gln Thr Ala Val Thr Ile Ala Phe Asp Tyr Ser
                405                 410                 415

Glu Lys Asp Asp Thr Ile Leu Leu Ser Pro Ala Cys Ala Ser Trp Asp
            420                 425                 430

Gln Tyr Pro Asn Phe Glu Val Arg Gly Glu Ala Phe Met Gln Ala Val
        435                 440                 445

Gln Gln Leu Lys Glu Ser Glu Met
    450                 455
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<212> PRT
<213> Pseudomonas aeruginosa

<400> 3

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Met Ser Leu Ile Ala Ser Asp His Phe Arg Ile Val Val Gly Leu Gly
1               5                   10                  15

Lys Ser Gly Met Ser Leu Val Arg Tyr Leu Ala Arg Arg Gly Leu Pro
            20                  25                  30

Phe Ala Val Val Asp Thr Arg Glu Asn Pro Pro Glu Leu Ala Thr Leu
        35                  40                  45

Arg Ala Gln Tyr Pro Gln Val Glu Val Arg Cys Gly Glu Leu Asp Ala
    50                  55                  60
```

```
Glu Phe Leu Cys Ser Ala Arg Glu Leu Tyr Val Ser Pro Gly Leu Ser
65                  70                  75                  80

Leu Arg Thr Pro Ala Leu Val Gln Ala Ala Ala Lys Gly Val Arg Ile
                85                  90                  95

Ser Gly Asp Ile Asp Leu Phe Ala Arg Glu Ala Lys Ala Pro Ile Val
            100                 105                 110

Ala Ile Thr Gly Ser Asn Ala Lys Ser Thr Val Thr Thr Leu Val Gly
        115                 120                 125

Glu Met Ala Val Ala Ala Asp Lys Arg Val Ala Val Gly Gly Asn Leu
    130                 135                 140

Gly Thr Pro Ala Leu Asp Leu Leu Ala Asp Asp Ile Glu Leu Tyr Val
145                 150                 155                 160

Leu Glu Leu Ser Ser Phe Gln Leu Glu Thr Cys Asp Arg Leu Asn Ala
                165                 170                 175

Glu Val Ala Thr Val Leu Asn Val Ser Glu Asp His Met Asp Arg Tyr
            180                 185                 190

Asp Gly Met Ala Asp Tyr His Leu Ala Lys His Arg Ile Phe Arg Gly
        195                 200                 205

Ala Arg Gln Val Val Val Asn Arg Ala Asp Ala Leu Thr Arg Pro Leu
    210                 215                 220

Ile Ala Asp Thr Val Pro Cys Trp Ser Phe Gly Leu Asn Lys Pro Asp
225                 230                 235                 240

Phe Lys Ala Phe Gly Leu Ile Glu Glu Asp Gly Gln Lys Trp Leu Ala
                245                 250                 255

Phe Gln Phe Asp Lys Leu Leu Pro Val Gly Glu Leu Lys Ile Arg Gly
            260                 265                 270

Ala His Asn Tyr Ser Asn Ala Leu Ala Ala Leu Ala Leu Gly His Ala
        275                 280                 285

Val Gly Leu Pro Phe Asp Ala Met Leu Gly Ala Leu Lys Ala Phe Ser
    290                 295                 300

Gly Leu Ala His Arg Cys Gln Trp Val Arg Glu Arg Gln Gly Val Ser
305                 310                 315                 320

Tyr Tyr Asp Asp Ser Lys Ala Thr Asn Val Gly Ala Ala Leu Ala Ala
                325                 330                 335

Ile Glu Gly Leu Gly Ala Asp Ile Asp Gly Lys Leu Val Leu Leu Ala
            340                 345                 350
```

```
Gly Gly Asp Gly Lys Gly Ala Asp Phe His Asp Leu Arg Glu Pro Val
        355                 360                 365

Ala Arg Phe Cys Arg Ala Val Val Leu Leu Gly Arg Asp Ala Gly Leu
    370                 375                 380

Ile Ala Gln Ala Leu Gly Asn Ala Val Pro Leu Val Arg Val Ala Thr
385                 390                 395                 400

Leu Asp Glu Ala Val Arg Gln Ala Ala Glu Leu Ala Arg Glu Gly Asp
                405                 410                 415

Ala Val Leu Leu Ser Pro Ala Cys Ala Ser Leu Asp Met Phe Lys Asn
            420                 425                 430

Phe Glu Glu Arg Gly Arg Leu Phe Ala Lys Ala Val Glu Glu Leu Ala
        435                 440                 445
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<210> 4
<211> 449
<212> PRT
<213> Staphylococcus aureus

<400> 4

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Met Leu Asn Tyr Thr Gly Leu Glu Asn Lys Asn Val Leu Val Val Gly
1               5                   10                  15

Leu Ala Lys Ser Gly Tyr Glu Ala Ala Lys Leu Leu Ser Lys Leu Gly
            20                  25                  30

Ala Asn Val Thr Val Asn Asp Gly Lys Asp Leu Ser Gln Asp Ala His
        35                  40                  45

Ala Lys Asp Leu Glu Ser Met Gly Ile Ser Val Val Ser Gly Ser His
    50                  55                  60

Pro Leu Thr Leu Leu Asp Asn Asn Pro Ile Ile Val Lys Asn Pro Gly
65                  70                  75                  80

Ile Pro Tyr Thr Val Ser Ile Ile Asp Glu Ala Val Lys Arg Gly Leu
                85                  90                  95

Lys Ile Leu Thr Glu Val Glu Leu Ser Tyr Leu Ile Ser Glu Ala Pro
            100                 105                 110

Ile Ile Ala Val Thr Gly Thr Asn Gly Lys Thr Thr Val Thr Ser Leu
        115                 120                 125

Ile Gly Asp Met Phe Lys Lys Ser Arg Leu Thr Gly Arg Leu Ser Gly
    130                 135                 140

Asn Ile Gly Tyr Val Ala Ser Lys Val Ala Gln Glu Val Lys Pro Thr
145                 150                 155                 160
```

```
Asp Tyr Leu Val Thr Glu Leu Ser Ser Phe Gln Leu Leu Gly Ile Glu
                165                 170                 175

Lys Tyr Lys Pro His Ile Ala Ile Ile Thr Asn Ile Tyr Ser Ala His
            180                 185                 190

Leu Asp Tyr His Glu Asn Leu Glu Asn Tyr Gln Asn Ala Lys Lys Gln
        195                 200                 205

Ile Tyr Lys Asn Gln Thr Glu Glu Asp Tyr Leu Ile Cys Asn Tyr His
    210                 215                 220

Gln Arg Gln Val Ile Glu Ser Glu Glu Leu Lys Ala Lys Thr Leu Tyr
225                 230                 235                 240

Phe Ser Thr Gln Gln Glu Val Asp Gly Ile Tyr Ile Lys Asp Gly Phe
                245                 250                 255

Ile Val Tyr Lys Gly Val Arg Ile Ile Asn Thr Glu Asp Leu Val Leu
            260                 265                 270

Pro Gly Glu His Asn Leu Glu Asn Ile Leu Ala Ala Val Leu Ala Cys
        275                 280                 285

Ile Leu Ala Gly Val Pro Ile Lys Ala Ile Ile Asp Ser Leu Thr Thr
    290                 295                 300

Phe Ser Gly Ile Glu His Arg Leu Gln Tyr Val Gly Thr Asn Arg Thr
305                 310                 315                 320

Asn Lys Tyr Tyr Asn Asp Ser Lys Ala Thr Asn Thr Leu Ala Thr Gln
                325                 330                 335

Phe Ala Leu Asn Ser Phe Asn Gln Pro Ile Ile Trp Leu Cys Gly Gly
            340                 345                 350

Leu Asp Arg Gly Asn Glu Phe Asp Glu Leu Ile Pro Tyr Met Glu Asn
        355                 360                 365

Val Arg Ala Met Val Val Phe Gly Gln Thr Lys Ala Lys Phe Ala Lys
    370                 375                 380

Leu Gly Asn Ser Gln Gly Lys Ser Val Ile Glu Ala Asn Asn Val Glu
385                 390                 395                 400

Asp Ala Val Asp Lys Val Gln Asp Ile Ile Glu Pro Asn Asp Val Val
                405                 410                 415

Leu Leu Ser Pro Ala Cys Ala Ser Trp Asp Gln Tyr Ser Thr Phe Glu
            420                 425                 430

Glu Arg Gly Glu Lys Phe Ile Glu Arg Phe Arg Ala His Leu Pro Ser
```

435 440 445

Tyr